

REMARKS

Claims 1-68 and 70-145 are pending in the above-captioned patent application after this Response. Claims 1-145 have been rejected. The Applicants respectfully disagree with and traverse the rejection of claims 1-68 and 70-145. Claims 70 and 71 have been amended to correct certain informalities and not to overcome any stated rejections in the present Office Action.

Support for the amendments to claims 70 and 71 can be found throughout the originally filed specification. In particular, support for the amendments to claims 70 and 71 can be found in originally filed claims 66 and 69-71. No new matter is believed to have been added by this amendment.

Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below. The Applicants respectfully request that this Amendment and Response be considered after final rejection because the Applicants believe that the Application, as amended, is in proper form for allowance.

INTERVIEW SUMMARY

On May 11, 2004, the undersigned attorney for the applicants conducted a telephonic interview with the Examiner, Peter Kim. During the Interview, the Examiner preliminarily agreed that there was no basis in the art for combining Horikawa et al. with Horikawa as suggested by the Examiner in the Final Office Action. Additionally, the Examiner preliminarily agreed that Horikawa et al. and Horikawa did not disclose a carrier or device holder that rotates relative to the device table at least approximately five degrees. However, the Examiner stated that he needed to review the references in greater detail and do another search prior to making a final determination regarding patentability of the pending claims. The Applicants wish to thank the Examiner for his time and assistance during prosecution of this application.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-6, 12-19, 31-34, 66-73, 82-85, 106-109, 113-115, 120-130, 137, 138, 140, 141 and 143-145

Claims 1-6, 12-19, 31-34, 66-73, 82-85, 106-109, 113-115, 120-130, 137, 138, 140, 141 and 143-145 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. (U.S. Patent No. 5,991,005) in view of Horikawa (U.S. Patent No. 6,124,923). The Applicants respectfully traverse the rejection of claims 1-6, 12-19, 31-34, 66-73, 82-85, 106-109, 113-115, 120-130, 137, 138, 140, 141 and 143-145 and respectfully submit that the rejection of claims 1-6, 12-19, 31-34, 66-73, 82-85, 106-109, 113-115, 120-130, 137, 138, 140, 141 and 143-145 is unsupported by the art and should be withdrawn.

More particularly, the Examiner contends that "Horikawa et al. discloses in Fig. 8, a method for making a stage assembly and a stage assembly that holds a device (W) the stage assembly comprising a stage base (210), a device table being movable relative to the stage base along a first axis, a carrier (230), a device holder (240) that retains the device, a holder connector assembly (60, 52) that connects the holder bottom to the carrier top so that deformation of the carrier does not result in deformation of the device holder (col. 12, lines 42-64). The connector assembly includes three space[d] apart flexures (60) wherein the connector kinematically connects the device holder to the carrier. The connector assembly includes three protrusions and three receivers (see Fig. 8). Horikawa et al. also discloses a device table (220) wherein the carrier is coupled to the table and the stage mover moves the table (col. 11, lines 39-67) and the device holder is rotatable relative to the device table (col. 12, lines 50-55). Horikawa et al. discloses an exposure apparatus including the stage assembly, a device manufacture[d] with the exposure apparatus and a wafer on which an image has been formed by the exposure apparatus (Fig. 1 and col. 1, lines 5-25). Horikawa et al. also discloses a method for making an exposure apparatus that form[s] an image on an object comprising steps of providing an irradiation apparatus and the stage assembly discussed above."

With regard to claim 123, the Examiner provides that "Horikawa [et al.] discloses a

stage assembly that holds a device (W), the stage assembly comprising a device table (230), a device holder (240), the device holder coupled to the device table (Fig. 8) and a holder damper assembly (60, 52) for damping vibration between the device holder and the device table (col. 12, lines 42-62)."

The Examiner concedes that "Horikawa et al. does not disclose the device table moving along a second axis orthogonal to the first axis and the carrier that is rotatable at least five degrees." However, the Examiner continues that "Horikawa (6,124,923) discloses a stage unit with a stage base (10), a device table (9) movable along the first and second axis, and a carrier (8) movable relative to the device table and rotatable at least five degrees (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the device table and the carrier of Horikawa to the invention of Horikawa et al. in order to provide an accurate and efficient alignment as taught by Horikawa in col. 1, line 53 – col. 2, line 6."

The Applicants provide that Horikawa et al. is directed to a stage apparatus 200 including a base 210; a Y-stage 220 mounted on the base 210, the Y-stage 220 being driven in the Y direction; an X-stage 230 mounted on the Y-stage 220, the X-stage 230 being driven in the X direction; a table 240 supported on the X-stage 230 with a plurality of flexures 60 and support bars 52a, 52b; and a wafer holder 250 that carries a wafer W mounted on the table 240. The flexures 60 are used as resilient members for constraining the position of the table 240 relative to the X-stage 230, for reducing any reaction forces acting on the table 240, and for minimizing any deformation of the table 240. (Horikawa et al. Abstract, column 1, lines 5-8, column 9, lines 3-12, column 11, lines 35-67, column 12, line 42 through column 13, line 17, and in Figures 7 and 8).

Additionally, the Applicants contend that Horikawa (6,124,923) is directed to a scanning exposure apparatus comprising a reticle base 10; a scanning stage 9 mounted on the reticle base 10 so as to be driven by a linear motor in the Y direction along linear guides 34A, 34B; a fine adjustment stage 8 that is movably and rotatably mounted on the scanning stage 9 in the X-Y plane through a plurality of spherical rollers 43A, 43B, the fine adjustment stage 8 capable of being finely moved in the X and Y directions and finely moved in the rotational direction; and a reticle 6 that is held on the fine adjustment stage 8.

(Horikawa Abstract, column 1, line 53 through column 2, line 6, column 6, lines 44-56, column 7, lines 23-48, column 8, lines 23-41, column 9, lines 4-9, and in Figures 1, 3, 5 and 6).

However, the proposed combination does not result in the present invention as claimed. More specifically, the proposed combination of Horikawa et al. and Horikawa does not disclose a stage assembly comprising a stage base, a device table that is movable relative to the stage base along a first axis and along a second axis that is orthogonal to the first axis, a carrier that is coupled to the device table and that is movable relative to the device table, a device holder that retains the device, and either a holder connector assembly that connects the device holder to the carrier or a holder damper assembly for damping vibration between the device holder and the device table.

Moreover, the combination of Horikawa et al. and Horikawa does not disclose a carrier, let alone a carrier that rotates relative to the device table at least approximately five degrees. The design of Horikawa et al. is believed to provide for only fine or minute movement in the rotational direction of the stage 8. For example, the stage 8 in Horikawa is driven in the rotational direction by the actuators 39A and 39B. Further, Horikawa provides that "[D]riving in the rotational direction is performed within a range not to bring the movable members 37A and 37B into contact with the stationary members 38A and 38B." (See Horikawa column 9, lines 29-38)

Further, there is no basis in the art for modifying or combining Horikawa et al. and Horikawa. Horikawa et al. already provides for positioning and movement of the wafer W (through the table 240) along the X-axis and the Y-axis. In order to somewhat approach the unique features that are recited in the present claims, the table 240 that holds the wafer W from Horikawa et al. would have to be secured to the fine adjustment stage 8 that holds the reticle 6 from Horikawa. There is simply no incentive provided in these references to position one fine positioning stage or table on top of another fine positioning stage or table.

In distinction to the cited references, claim 1 recites "[a] stage assembly that holds a device, the stage assembly comprising: a stage base; a device table being movable relative to the stage base along a first axis and along a second axis that is

orthogonal to the first axis; a carrier coupled to the device table and being movable relative to the device table; a device holder that retains the device; and a holder connector assembly that connects the device holder to the carrier so that deformation of the carrier does not result in deformation of the device holder.”

Accordingly, the § 103(a) rejection of claim 1 is unsupported by the art and should be withdrawn. Because claims 2-6, 12-19 and 31-34 depend either directly or indirectly upon claim 1, the § 103(a) rejection of these claims is also unsupported by the art and should be withdrawn.

Further, in distinction to the cited references, claim 66 recites “[a] stage assembly that holds a device, the stage assembly comprising: a device table; a carrier that is coupled to the device table, the carrier rotating relative to the device table at least approximately five degrees between a first position and a second position; a device holder that retains the device; and a holder connector assembly that directly connects the device holder to the carrier, the holder connector assembly including a flexure.”

Accordingly, the § 103(a) rejection of claim 66 is unsupported by the art and should be withdrawn. Because claims 67-73 and 82-85 depend either directly or indirectly upon claim 66, the § 103(a) rejection of these claims is also unsupported by the art and should be withdrawn.

Additionally, in distinction to the cited references, claim 106 recites “[a] method for making a stage assembly that holds a device, the method comprising the steps of: providing a stage base; providing a device table that is movable along a first axis and along a second axis that is orthogonal to the first axis relative to the stage base; connecting a carrier to the device table, the carrier being movable relative to the device table; and connecting a device holder that retains the device to the carrier so that deformation of the carrier does not result in deformation of the device holder.”

Accordingly, the § 103(a) rejection of claim 106 is unsupported by the art and should be withdrawn. Because claims 107-109, 113-115 and 120-122 depend either directly or indirectly upon claim 106, the § 103(a) rejection of these claims is also unsupported by the art and should be withdrawn.

Still further, in distinction to the cited references, claim 123 recites “[a] stage

assembly that holds a device, the stage assembly comprising: a stage base; a device table that is movable relative to the stage base along a first axis and along a second axis that is orthogonal to the first axis; a device holder that retains the device, the device holder being coupled to the device table, the device holder rotating relative to the device table at least approximately five degrees; and a holder damper assembly for damping vibration between the device holder and the device table.”

Accordingly, the § 103(a) rejection of claim 123 is unsupported by the art and should be withdrawn. Because claims 124-130, 137, 138, 140, 141 and 143-145 depend either directly or indirectly upon claim 123, the § 103(a) rejection of these claims is also unsupported by the art and should be withdrawn.

Claims 86-88, 92-96 and 103-105

Claims 86-88, 92-96 and 103-105 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa and Lee. The Applicants respectfully traverse the rejection of claims 86-88, 92-96 and 103-105 and respectfully submit that the rejection of claims 86-88, 92-96 and 103-105 is unsupported by the art and should be withdrawn.

More particularly, the Examiner contends that “Horikawa et al. discloses in Fig. 8, a method for making a stage assembly and a stage assembly that holds a device (W) the stage assembly comprising a stage base (210), a device table being movable relative to the stage base along a first axis, a carrier (230), a device holder (240) that retains the device, a holder connector assembly (60, 52) that connects the holder bottom to the carrier top so that deformation of the carrier does not result in deformation of the device holder (col. 12, lines 42-64). The connector assembly includes three space[d] apart flexures (60) wherein the connector kinematically connects the device holder to the carrier. The connector assembly includes three protrusions and three receivers (see Fig. 8). Horikawa et al. also discloses a device table (220) wherein the carrier is coupled to the table and the stage mover moves the table (col. 11, lines 39-67) and the device holder is rotatable relative to the device table (col. 12, lines 50-55). Horikawa et al. discloses an exposure apparatus including the stage assembly, a device manufacture[d] with the exposure

apparatus and a wafer on which an image has been formed by the exposure apparatus (Fig. 1 and col. 1, lines 5-25). Horikawa et al. also discloses a method for making an exposure apparatus that form[s] an image on an object comprising steps of providing an irradiation apparatus and the stage assembly discussed above.”

The Examiner concedes that “Horikawa et al. does not disclose the device table moving along a second axis orthogonal to the first axis and the carrier that is rotatable at least five degrees.” However, the Examiner continues that “Horikawa et al. also does not disclose fluid bearings. Horikawa (6,124,923) discloses a stage unit with a stage base (10), a device table (9) movable along the first and second axis, and a carrier (8) movable relative to the device table and rotatable at least five degrees (abstract). Lee discloses a holder connector assembly (36) made of three fluid assemblies that connects the holder bottom to the carrier top so that deformation of the carrier does not result in deformation of the device holder (para 0024, 0011). Lee discloses an exposure apparatus including the stage assembly, a device manufacture[d] with the exposure apparatus and a wafer on which an image has been formed by the exposure apparatus (Para 0002-0006). Lee also discloses a method for making an exposure apparatus that form[s] an image on an object comprising steps of providing an irradiation apparatus and the stage assembly discussed above (para 0002-0006). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the device table and the carrier of Horikawa and the fluid bearing of Lee to the invention of Horikawa et al. in order to provide an accurate and efficient alignment as taught by Horikawa in col. 1, line 53 – col. 2, line 6 and to reduce deformation of holder as taught by Lee in para 0005, 0006, and 0011.”

The Applicants provide that Lee is directed to a stage mechanism comprising a stage 10 movable in the X-Y plane that is supported on a base structure 32 via air bearings 36A, 36B, 36C to minimize friction. A reticle 24 is located on stage 10 and held by a vacuum groove 26 formed in the upper surface of a chuck plate 28. (Lee paragraphs 0007, 0011, 0023, 0024, and in Figures 1 and 2).

However, the proposed combination does not result in the present invention as claimed. More specifically, the proposed combination of Horikawa et al., Horikawa and Lee does not disclose a stage assembly comprising a device table that is movable along a

first axis and along a second axis that is orthogonal to the first axis, a carrier that is coupled to the device table and movable relative to the device table, a device holder that retains the device, and a holder connector assembly that connects the device holder to the carrier, the holder connector assembly including a fluid bearing.

Further, there is no basis in the art for modifying or combining Horikawa et al., Horikawa and Lee. Horikawa et al. already provides for positioning and movement of the wafer W (through the table 240) along the X-axis and the Y-axis. In order to somewhat approach the unique features that are recited in the present claims, the table 240 that holds the wafer W from Horikawa et al. would have to be connected to the fine adjustment stage 8 that holds the reticle 6 from Horikawa with a fluid bearing. There is simply no incentive provided in these references to position one fine positioning stage or table on top of another fine positioning stage or table and connecting them with a fluid bearing.

In distinction to the cited references, claim 86 recites “[a] stage assembly that holds a device, the stage assembly comprising: a device table that is movable along a first axis and along a second axis that is orthogonal to the first axis; a carrier that is coupled to the device table and moves relative to the device table; a device holder that retains the device; and a holder connector assembly that directly connects the device holder to the carrier, the holder connector assembly including a fluid bearing.”

Accordingly, the § 103(a) rejection of claim 86 is unsupported by the art and should be withdrawn. Because claims 87, 88, 92-96 and 103-105 depend either directly or indirectly upon claim 86, the § 103(a) rejection of these claims is also unsupported by the art and should be withdrawn.

Claims 7, 8 and 110

Claims 7, 8 and 110 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa as applied to claims 1, 66, 106 and 123 above, and further in view of Lee.

As noted above, the rejection of claims 1 and 106 is unsupported by the art. Therefore, claims 1 and 106 negate a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 7 and 8, which either directly or

indirectly depend from claim 1, and claim 110, which directly depends from claim 106, are patentably distinguishable over the cited combination of references.

Claims 9-11, 89-91, 111 and 112

Claims 9-11, 89-91, 111 and 112 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa and Lee as applied to claims 1, 86 and 106 above, and further in view of Usui.

As noted above, the rejection of claims 1, 86 and 106 is unsupported by the art. Therefore, claims 1, 86 and 106 negate a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 9-11, which indirectly depend from claim 1, claims 89-91, which indirectly depend from claim 86, and claims 111 and 112, which indirectly depend from claim 106, are patentably distinguishable over the cited combination of references.

Claims 35-39, 45-51 and 59-65

Claims 35-39, 45-51 and 59-65 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa and Korenaga. The Applicants respectfully traverse the rejection of claims 35-39, 45-51 and 59-65 and respectfully submit that the rejection of claims 35-39, 45-51 and 59-65 is unsupported by the art and should be withdrawn.

More particularly, the Examiner contends that "Horikawa et al. discloses in Fig. 8, a method for making a stage assembly and a stage assembly that holds a device (W) the stage assembly comprising a stage base (210), a device table being movable relative to the stage base along a first axis, a carrier (230), a device holder (240) that retains the device, a holder connector assembly (60, 52) that connects the holder bottom to the carrier top so that deformation of the carrier does not result in deformation of the device holder (col. 12, lines 42-64). The connector assembly includes three space[d] apart flexures (60) wherein the connector kinematically connects the device holder to the carrier. The connector assembly includes three protrusions and three receivers (see Fig. 8). Horikawa et al. also discloses a device table (220) wherein the carrier is coupled to the table and the

stage mover moves the table (col. 11, lines 39-67) and the device holder is rotatable relative to the device table (col. 12, lines 50-55). Horikawa et al. discloses an exposure apparatus including the stage assembly, a device manufacture[d] with the exposure apparatus and a wafer on which an image has been formed by the exposure apparatus (Fig. 1 and col. 1, lines 5-25). Horikawa et al. also discloses a method for making an exposure apparatus that form[s] an image on an object comprising steps of providing an irradiation apparatus and the stage assembly discussed above."

The Examiner concedes that "Horikawa et al. does not disclose the device table moving along a second axis orthogonal to the first axis and the carrier that is rotatable at least five degrees." However, the Examiner continues that "Horikawa et al. also does not disclose a holder damper assembly. Horikawa (6,124,923) discloses a stage unit with a stage base (10), a device table (9) movable along the first and second axis, and a carrier (8) movable relative to the device table and rotatable at least five degrees (abstract). Korenaga discloses a holder damper assembly including magnet generating flux that dampen vibration (580, 581, col. 23, line 36 – col. 26, lines 65) for damping vibration between the device holder and the carrier. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the device table and the carrier of Horikawa and the holder damper of Korenaga to the invention of Horikawa et al. in order to provide an accurate and efficient alignment as taught by Horikawa in col. 1, line 53 – col. 2, line 6 and to prevent vibration from reaching the device holder as taught by Korenaga in col. 12, lines 42-62."

The Applicants provide that Korenaga et al. is directed to a stage system comprising a base table 502; a Y stage 551 slidable in the Y direction, supported by an air slide and Y yaw guide 550 above the base table 502; an X stage 561 slidable in the X direction, supported by an air slide and X yaw guides 552 above the base table 502; and a wafer top plate 501 having a wafer chuck 571 to retain a wafer, the wafer top plate movable in six degrees of freedom for fine positioning of the wafer.

The X stage 561, including X stage side plates 562, X stage top plate 563, and X stage bottom plate 564, moves in the Y direction with the Y stage 551 and moves in the X direction relative to the Y stage 551. A fine-motion actuator comprising a fine-motion

linear motor 503 and an electromagnet 508 produces a driving force between the X stage 561 and the wafer top plate 501 for minutely moving the wafer top plate 501 relative to the X stage 561. The fine-motion linear motor 503 includes eight linear motor moving elements 504 mounted on the bottom face of the wafer top plate 501 and stators 505 mounted on the top of the X stage top plate 563 that cooperate so that substantially no rotational force about the X axis, the Y axis or the Z axis acts on the wafer top plate 501. Additionally, the wafer top plate 501 is supported above the X stage 561 with a supporting cylindrical member 580 and a weight compensating spring 581 disposed inside the central hollow portion of the supporting cylindrical member 580 so that transmission of vibration from the X stage 561 to the wafer top plate 501 through the spring 581 can be disregarded. (Korenaga et al. column 21, line 42 through column 22, line 59, column 23, lines 32 through column 25, line 57, and in Figures 8-10).

However, the proposed combination does not result in the present invention as claimed. More specifically, the proposed combination of Horikawa et al., Horikawa and Korenaga does not disclose a stage assembly comprising a stage base, a device table that is movable relative to the stage base along a first axis and along a second axis that is orthogonal to the first axis, a carrier coupled to the device table and movable relative to the device table, a device holder that retains the device, a holder connector assembly that connects the device holder to the carrier, and a holder damper assembly for damping vibration between the device holder and the device table.

Further, there is no basis in the art for modifying or combining Horikawa et al., Horikawa and Korenaga. Horikawa et al. already provides for positioning and movement of the wafer W (through the table 240) along the X-axis and the Y-axis. In order to somewhat approach the unique features that are recited in the present claims, the table 240 that holds the wafer W from Horikawa et al. would have to be connected to the fine adjustment stage 8 that holds the reticle 6 from Horikawa with a holder damper assembly. There is simply no incentive provided in these references to position one fine positioning stage or table on top of another fine positioning stage or table and connecting them with a holder damper assembly.

In distinction to the cited references, claim 35 recites "[a] stage assembly that

holds a device, the stage assembly comprising: a stage base; a device table being movable relative to the stage base along a first axis and along a second axis that is orthogonal to the first axis; a carrier coupled to the device table and movable relative to the device table; a device holder that retains the device; a holder connector assembly that connects the device holder to the carrier so that deformation of the carrier does not result in deformation of the device holder; and a holder damper assembly connected to at least one of the device holder and the carrier, the holder damper damping vibration between the device holder and the carrier.”

Accordingly, the § 103(a) rejection of claim 35 is unsupported by the art and should be withdrawn. Because claims 36-39, 45-51 and 59-65 depend either directly or indirectly upon claim 35, the § 103(a) rejection of these claims is also unsupported by the art and should be withdrawn.

Claims 20, 27-30, 74, 79-81, 116, 118, 119, 139 and 142

Claims 20, 27-30, 74, 79-81, 116, 118, 119, 139 and 142 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa as applied to claims 1, 35, 66, 106 and 123 above, and further in view of Korenaga.

As noted above, the rejection of claims 1, 66, 106 and 123 is unsupported by the art. Therefore, claims 1, 66, 106 and 123 negate a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 20 and 27-30, which either directly or indirectly depend from claim 1, claims 74 and 79-81, which either directly or indirectly depend from claim 66, claims 116, 118 and 119, which either directly or indirectly depend from claim 106, and claims 139 and 142, which depend directly from claim 123, are patentably distinguishable over the cited combination of references.

Claims 21-26, 52-58 and 75-78

Claims 21-26, 52-58 and 75-78 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa and Korenaga as applied to claims 1, 35 and 66 above, and further in view of Chen.

As noted above, the rejection of claims 1, 35 and 66 is unsupported by the art.

Therefore, claims 1, 35 and 66 negate a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 21-26, which indirectly depend from claim 1, claims 52-58, which depend either directly or indirectly from claim 35, and claims 75-78, which indirectly depend from claim 66, are patentably distinguishable over the cited combination of references.

Claims 117 and 131-136

Claims 117 and 131-136 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa as applied to claims 106 and 123 above, and further in view of Chen.

As noted above, the rejection of claims 106 and 123 is unsupported by the art. Therefore, claims 106 and 123 negate a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claim 117, which indirectly depends from claim 106, and claims 131-136, which depend either directly or indirectly from claim 123, are patentably distinguishable over the cited combination of references.

Claims 40 and 41

Claims 40 and 41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa and Korenaga as applied to claim 35 above, and further in view of Lee.

As noted above, the rejection of claim 35 is unsupported by the art. Therefore, claim 35 negates a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 40 and 41, which either directly or indirectly depend from claim 35, are patentably distinguishable over the cited combination of references.

Claims 42-44

Claims 42-44 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa, Korenaga and Lee as applied to claim 41 above, and further in view of Usui.

As noted above, the rejection of claim 35 is unsupported by the art. Therefore, claim 35 negates a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 42-44, which indirectly depend from claim 35, are patentably distinguishable over the cited combination of references.

Claim 97

Claim 97 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa and Lee as applied to claim 86 above, and further in view of Korenaga.

As noted above, the rejection of claim 86 is unsupported by the art. Therefore, claim 86 negates a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claim 97, which directly depends from claim 86, is patentably distinguishable over the cited combination of references.

Claims 98-102

Claims 98-102 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Horikawa et al. in view of Horikawa, Lee and Korenaga as applied to claim 97 above, and further in view of Chen.

As noted above, the rejection of claim 86 is unsupported by the art. Therefore, claim 86 negates a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 98-102, which indirectly depend from claim 86, are patentably distinguishable over the cited combination of references.

Conclusion

In conclusion, the Applicants respectfully assert that claims 1-68 and 70-145 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this 3rd day of June, 2004.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'S G R', is positioned above the printed name.

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